

SPECIAL ARTICLES

IMPROVING EMERGENCY CARE IN GHANA*

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Introduction

It is an immeasurable honour to be in the company of His Excellency the Vice President of the Republic of Ghana Vice President Kwesi Amisshah-Arthur, and with you all today, and to share my humble thoughts on "Improving Emergency Care in Ghana". It is also an inestimable honour to be in the company of so many highly-skilled health professionals, and I feel an even greater honour that I have been asked to deliver this year's College Lecture. I never for once thought that one day I would give a lecture to those who taught me in Medical School, but there you are; in the audience I see a number of my former lecturers!

Last year in Lome I was a facilitator on a Trauma management session held by the West African College of Surgeons. I wanted to make the point that in these austere times we as health workers should be looking for ways to improve care without expecting more money or more resources from government.

I took the liberty to quote from His Excellency President John Dramani Mahama's State of the Nation address in February 2013. The President had stated, and I quote, "Mr. Speaker, the meat is now down to the bones, and it is time for serious rethinking about the level of wages in relation to our national competitiveness and the related productivity issues."¹

The room remained quiet for a while - I am not sure whether because the audience agreed or disagreed with me. Then suddenly one Nigerian colleague shouted from the back "As for you Ghanaians and complaining! You should come to Nigeria where you would see that we are down to the marrow!" and the room erupted with laughter. Upon sober reflection, however, it remains my opinion that meat, bone, or marrow, a case can still be made for more efficient use of health care resources to improve how we look after emergencies. And I will share evidence from the literature which shows that it is possible to improve some care without spending a pesewa more.

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Emergencies occur everywhere, and each day they consume resources regardless of whether there are systems capable of achieving good outcomes².

Overview of lecture

In this talk I will give a brief overview of the developments in formal emergency care provision in Ghana over the past ten or so years. I will describe our experience at Komfo Anokye Teaching Hospital (KATH) in setting up a novel Emergency Medicine (EM) training program, and some achievements we have chalked. I will use a number of narratives to illustrate points about what I consider to be areas where change is likely to yield the greatest impact in improving emergency care in Ghana. I will describe one pitfall you should avoid, and state why, if you wish to establish a formal emergency department (ED) in your hospital. I will end by suggesting further ways of improving emergency care in a low resource setting such as Ghana.

Brief history of Emergency Medicine practice in Ghana

Prior to the Millennium Year there had been some interest shown in developing formal emergency care systems in Ghana, notably by groups from US universities, but it took the tragic Accra stadium disaster in May 2001 to push official Ghana into action. That is when the Government of Ghana established the National Ambulance Service (NAS) and built a national Accident & Emergency (A&E) Center at KATH, laying the groundwork to start a training program in emergency medicine.

Even though sub-Saharan Africa faces a disproportionate burden of acute injury and illness, few clinical facilities are configured to take an integrated approach to resuscitation and stabilisation. The statistics are sobering. Sub-Saharan Africa bears 24% global disease burden, and yet is home to only 3% of the world's health workforce³. The population has been increasing, outstripping the already poor doctor/patient and nurse/patient ratios. The number of deaths reported annually as attributable to injury has been increasing.

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Ghana road traffic accident mortality statistics

Statistics available from the Ministry of Transport indicates that as at October this year, a total of 11,035 cases of road traffic crashes had been reported involving 16,749 vehicles, 9,648 injuries and 1,606 deaths⁴. These statistics unfortunately have a very personal resonance. Nearly six months ago the KATH ED lost Mr. Daniel Opoku, affectionately called “Sketcher”, in a horrific road crash. Our valiant staff resuscitated him in our department but sadly could not revive him. He was a remarkable young man, totally devoted to his calling and we miss him dearly.

In a study published by London et al. in 2002 injuries accounted for 8.6% of all deaths recorded in Komfo Anokye Teaching Hospital mortuary, and for 12% of deaths in the age range 15-59 years⁵. The paper further reported that 80% of deaths caused by injury occurred outside the hospital and thus would not have been indicated in hospital statistics; 88% of injury-related deaths were associated with transport, and 50% of these involved injuries to pedestrians. Among their conclusions were that many of these accidents could be prevented, for example by improving roads and safety of vehicles, and by better enforcement of drink-driving legislation.

Prevention is always better than cure. But, of course, no matter how much we might improve, there will always be accidents. Then, highly skilled emergency physicians, emergency nurses, and paramedics are often the last hope for a seriously injured patient. Recent serious accidents e.g. Melcom building collapse, highlighted the vital role of emergency teams in rescue and saving lives. It is fitting to remember that they do this not only in relation to accidents, but also to other medical emergencies, for example, heart attacks, strokes, or acute respiratory problems.

I wish to pay tribute to Professor Paul Nyame, former Rector of the Ghana College of Physicians and Surgeons, who had the foresight to establish Emergency Medicine as a Faculty in the Ghana College of Physicians and Surgeons - an important reform of the Ghanaian health care system with an integrated emergency care system as an essential pillar.

Pre-hospital care in Ghana

The pre-hospital care system in Ghana remains in the early stages of development. While ambulance stations since inception have grown from 7 stations in Ghana to 121 stations country-wide within a span of 8 years, most accident victims are often transported in vehicles such as taxis and minibuses by untrained personnel.

As at end of 2013 NAS had trained more than 1316 Emergency Medical Technicians (EMTs), and were transporting an annual total of 5,500 cases with

an average call-to-response time of about 20 minutes. If today the majority of ambulances reach patients within 20 to 30 minutes, this is largely a result of the sustained development of NAS under the leadership of Prof. Ahmed Zachariah. I am sure that this important plank of emergency care will continue to grow in leaps and bounds and the end result will contribute to improved emergency care.

Barriers to improving emergency care in Ghana

A lack of data on the acute burden of disease hampers planning and equitable resource allocation. Our national literacy rates may be high but most people do not know what to do in emergencies. Some people are gullible, preferring pastors and untested herbal concoctions to early hospital care. Late arrival in hospital, mishandling of severely injured patients by untrained persons, inadequately trained staff, and inadequate equipment are all known contributory factors for the high mortality rates. It is estimated that persons with life-threatening, but salvageable injuries are six times more likely to die in Ghana (36%), than in the USA (6%)⁶.

To the toll of road traffic accidents are added domestic accidents, natural disasters, medical, surgical, and obstetric emergencies. The pressure on the health system is immense and there is a need to invest in emergency systems which are cost effective and also proven to reduce mortality and morbidity. Barriers to improving emergency care in Ghana go beyond technical and training issues. Economic and cultural barriers exist as well. The government funds 80% of the public health services through the NHIS, general taxation, and donor funds. Unfortunately a residual “cash and carry system” persists for supplies and medicines frequently resulting in a significant barrier to health care.

The Ghana Emergency Medicine Collaborative

Currently Emergency Medicine exists as a specialty in Ghana only in Komfo Anokye Teaching Hospital (KATH), though efforts are in place to expand to Tamale and Tema. Generally speaking, hospital emergency areas are not autonomous entities under focused leadership by a trained specialist. Interestingly that is how hospital-based emergency care was organised in the UK about 60 years ago.

In conjunction with the Kwame Nkrumah University of Science and Technology, the Ghana College of Physicians and Surgeons (GCPS), the University of Michigan, the Ghana Health Service, and the Ministry of Health, training programs for Emergency Physicians and other health professionals in emergency care have been developed⁷. The training programs also undertake

data collection and research as a basis for planning and developing emergency care across the country.

After 5 years, the program has graduated 11 specialists and there are 29 residents in various stages of training. The first ever 25 Diploma emergency nurse trainees graduated in November 2013. The specialists teach junior doctors and medical students, and also provide advanced training for EMTs. Even though the GCPS now has a Faculty of Emergency Medicine, the discipline is not yet an undergraduate medical student module in Ghana; this notwithstanding, nearly 500 medical students have rotated through the Emergency department at KATH.

Notable achievements include the implementation of Nurse-led triage using the South African Triage Score (SATS)⁸, 24-hour physician provided emergency airway care, Focused Assessment with Sonography for trauma patients (FAST scans) and ultrasound guided interventional procedures. Trainees have made oral and poster presentations at international conferences, and contributed to 12 peer-reviewed publications in reputable international journals. They have also contributed chapters to the African Federation of Emergency Medicine (AFEM) Handbook of Emergency Medicine⁹. We hold low-cost simulation trauma courses at KATH annually. We are planning to start an Advance Trauma Life Support (ATLS) course in conjunction with GCPS in April/May 2015.

We have recently acquired computer equipment and are currently collecting Data which will develop a Trauma and Injury registry. This will improve our ability to answer some research questions too. I am particularly proud that we have instituted a computer calculated Triage score. This is based on open-source technology, is web-based, scalable, and therefore offers the exciting prospect of being able to use the internet to assign a triage score to any emergency case anywhere in the country.

Another piece of research which we have conducted assessed HIV/AIDS prevalence at the KATH A&E Directorate¹⁰. It showed an incidence rate of 13.5% as compared with the national rate of 2%. This has implications for practice in EDs across the country. Guidelines and Standard Operating Procedures (SOPs) for care of HIV/AIDS patients in EDs have been developed for the Ministry of Health to use throughout the country¹¹.

Low cost improvements to emergency care – start by improving communications

The first story I am going to tell you is about a road traffic accident which occurred in September 2014 on the Accra-Kumasi road. Two VIP buses collided head on in the early hours of the morning. There were reportedly 20 fatalities. Initially patients were taken to a nearby Hospital by Ambulance and following primary

triage, transfers commenced to KATH at 10:00 am. Four patients were subsequently transferred to KATH ED by ambulance. The KATH ED was severely overcrowded at the time these patients arrived.

There was unfortunately no pre-alert communication. KATH switch board had no contact details for the referring Hospital. The irony is that there is a well written National Referral document¹², but these guidelines are usually not followed when a referral is made to the KATH ED. If there had been even a few minutes of pre-alert notification the department could have freed some trolleys to transfer the patients on to. The chances for patient survival improve with adequate pre alert notification.

The provision of a reliable communication system is essential for emergency care in all its modern guises. It can improve referrals to the appropriate level of care, whether in the community or to a tertiary hospital. A good communication infrastructure will also enable the lay population to gain access to existing emergency care facilities.

Lessons from another industry - setting standards can improve care

The second story is partly true and partly fiction, but still illustrates a number of important principles about improving emergency care. I was travelling to Accra from Kumasi about nine months ago. The plane was getting ready to take off. There was a chap sitting in the same row reading Daily Graphic. I could not help noticing the headline about a patient who had died in a hospital that will remain unnamed. Another chap reading over his shoulder retorted "I hope the pilot in our plane does not do his work like those doctors!"

The airline industry has an enviable safety record. Pilots possess the technical expertise for flying complex airplanes, but still go through extensive checklists with each flight. There have been a lot of expert comments about airline safety record, and questions have rightly been asked if lessons from the airline industry could be applied to medical care to improve patient safety. Such lessons include practicing well laid down protocols, focusing on preventing accidents rather than just reacting to them, good team working, clear leadership, as well as operating to standards.

Patients have a right to expect that we operate according to some minimum standards. Our oath and our regulatory bodies hold us to that sacred account. If we forget that, then the press and the public have the right to remind us to do what is right as health professionals.

Lessons from other countries – planning, partnership, and team working can improve emergency care quality

The third narration is not really a story, but more like history. In the past 10 years the UK government

has launched an initiative requiring 98% of A&E patients to be seen, treated, and discharged or admitted within 4 hours. People worried that it was a non-clinical target, and would not improve care in anyway. But it has improved care in the UK by encouraging doctors and nurses to change the way they work to benefit patients. The government set the standard and that standard drove change, modified practice, and improved emergency care^{13, 14}.

The 4 hour target positively influenced the way health workers organised and cooperated across the whole emergency care system¹⁵. The process was largely implemented with no “new money”. Hospital staff came together to form emergency services collaboratives, and emergency care networks. In this way they ironed out problems, and spread good ideas and practice to improve emergency care. The teams focused seemingly on one target. What were the things that kept patients waiting in A&E? The findings were that bed management, diagnostics, admissions and discharge procedures, could present complex problems, but that does not mean they are insoluble. And the solutions were achieved by modifying practice.

While a lot of things can be done without extra money, progress should not be held back by a lack of resources. Some investment in training infrastructure and equipment was necessary to keep the 4-hour standard on track.

Good systems and process redesign improve patient safety

The last story to share with you relates to making effective change without spending much money. No new equipment, staff, or (clinical) resources. Improve outcomes with no improvement in skills and competencies.

Between October 2007 and September 2008, eight hospitals in eight cities representing a variety of economic circumstances participated in the World Health Organization's Safe Surgery Saves Lives program. Prospective data was collected on clinical processes and outcomes from 3733 adult patients undergoing noncardiac surgery.

After introducing the Surgical Safety Checklist further data was collected on 3955 patients. The primary end point was the rate of complications, including death, during hospitalisation within the first 30 days after the operation. Implementation of the checklist was associated with statistically significant reductions in the rates of death and complications among the patients¹⁶. Today the Surgical Safety Checklist is used in theatres all over the world. It is a cost neutral intervention.

One of the researchers has stated that embracing the checklists is not the idea; embracing a culture of teamwork and discipline is¹⁷.

Managing change – embedding formal emergency care in the wider health system

The problem is that as humans we get into a comfort zone and we do not like change. We are creatures of habit. Most of us are used to working in a certain way, and feel that “if it ain't broke don't fix it”. Changing to a newer form of emergency care provision can be a bit like that. Resistance to change may be couched in the following phrases. “It is not our way of working here”. “The emphasis is wrongly placed on process whereas real doctors are only interested in diagnoses”. “It will cost too much”. “It cannot work here”. “We just don't have the resources”.

Listen to Machiavelli, Renaissance Politician, Diplomat, and Historian: “There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions, and lukewarm defenders in those who may do well under the new”¹⁸.

There was initial difficulty establishing the EM training program in KATH. Some did not like the idea of Triage nurses referring patients to doctors. Some just did not like the whole idea, and did not want an interloper to see their patients first. We got over most of these teething problems. But one pitfall remains.

Minimising delay to definitive care improves outcome

The Ghanaian press often publishes reports about emergency cases with fatal outcomes. For example, a patient with a strangulated hernia died in February 2014. In October 2014 newspapers reported about an 18 year old emergency patient who died in an Accra hospital. In November 2014 a 19 year old Legon student died allegedly because “the doctors at the emergency department failed to call for the assistance of a senior medical officer after 10 hours effort to diagnose and treat his ailment”.

The common thread in all these press cases is delay in seeing the patient or in instituting definitive care. I will dwell on this a little bit, because the ugly twin of delay in emergency care is overcrowding. The excited press usually reports these cases as negligence, without even the necessary adjectival legal euphemism of “alleged”. If these reports are all to be believed then we might be forced to accept Napoleon Bonaparte's cynical prediction that “Doctors will have more lives to answer for in the next world than even we generals¹⁹.”

Writing in the World Journal of Surgery in July 2014 Yeboah, Mock, Karikari, and others found that a high proportion of trauma fatalities could have been prevented by decreasing pre-hospital delays, adequate

resuscitation in hospital, and earlier initiation of care, including definitive surgical management²⁰. To reduce delays in the patient journey, hospitals need to look for causes both within and outside A&E departments.

The role of professional colleges and regulatory bodies: focused training and centralised standards

In addition to the UK government 4-hour target discussed earlier, the UK Royal Surgical Colleges have also periodically published recommendations for the organisation of emergency services and management of patients with serious trauma injuries^{21, 22, 23}. These recommendations advise more consultant involvement in the early management of trauma, improved training of prehospital staff, expanding access of carers to ATLS courses, establishing Trauma teams within hospitals, establishing trauma centres for the care of the more seriously injured, and a national audit scheme. I believe the Ghana College of Physicians and Surgeons could play a similar role by setting the required standards in this country. For example, GCPS accreditation visits could verify what evidence a teaching hospital is making towards reducing delay in the care of emergency patients and by extension ED overcrowding.

I believe that following these principles will achieve better outcomes for emergency patients and without too excessive a financial cost.

Train the healthcare workforce and community-based practitioners to provide emergency care

The goal of improving emergency care will be well served by training the health care work force, organisation of existing facilities, and equitable financing. Training should be directed to the entire emergency care work force, from Community First Aiders, GPRTU drivers, CHPS compound staff, and staff in the various levels of hospitals. We need to use strategies that are simple and effective; in certain situations training people who may come into contact with emergency patients to recognise life threats may prove more effective in improving outcomes than installing expensive technologies. We need public education on recognition of illness, to reduce harmful practices, to train people in basic CPR, and to help them understand the chain of survival. Clearly education is also important for the health care work force to stay up to date with their knowledge and skills.

Organisation of emergency care teams – trauma systems reduce mortality

Time will not allow me to go through published evidence in the literature showing how arrangements such as Trauma Teams, Regional Trauma systems or net-

works significantly reduce mortality. One study²⁴ in the literature based trauma care on the following standards: 1) ATLS trained doctor always available; 2) Consultant attends within 30 minutes; 3) Emergency theatre available within 30 minutes; 4) CT scan available 24/7; 5) Pathology service available 24/7; 6) Agreed transfer protocols; 7) Results externally audited. It would have been surprising if this study had reported anything but improved trauma outcomes.

It would appear that the ingredients in all these is to identify a problem, institute policy to establish standards, modify infrastructure and/or train staff, and imbue the staff with a philosophy of team work. Communication joins all these dots together.

Avoid emergency department overcrowding

There are probably colleagues here who will want to run a dedicated autonomous emergency department along the lines we have in KATH. I promised to talk about one pitfall in establishing an emergency department. That pitfall is ED overcrowding. Once it gets a foothold it is like a cancer. Even your best colleagues will sleep on with a spotless conscience, once they appreciate the ED as a place of safety. But there is a reason it is called Emergency Department not Emergency ward. The truth is that the ED is like an operating theatre – patients must leave A&E after they have received a disposition.

Why is emergency department overcrowding such a bad thing?

A study by Richardson in 2006 found a 43% increase in mortality at 10 days after admission through a crowded A&E²⁵. Liew et al. found that long waits strongly correlated with increasing length of stay in hospital, and that length of stay in the emergency department independently predicted inpatient length of stay. ED stay 4-8 hours increases inpatient length of stay by 1.3 days; ED stay more than 12 hours increases inpatient length of stay by 2.35 days²⁶.

There is evidence that patients in overcrowded EDs receive delayed care²⁷. Furthermore there is association between waiting times in the ED and increased 7-day mortality, perhaps reflecting lower quality of care from an overcrowded A&E department²⁸.

Emergency department overcrowding often reflects poor care in the institution

The best solution to ED overcrowding is to recognise that it is hardly ever an isolated ED problem. Emergency patient flow, or the lack of it, is not an A&E specific function; it is a barometer of how well we manage flow through the whole hospital. If one accepts that it is a hospital-wide problem then it may be resolved by actions including early senior review on

the wards, with a sustained focus on discharging patients home whenever it is safe to do so.

A National Directorate of Urgent Care co-ordinating emergency care and planning

Some of the methods in use in more mature emergency settings include establishing a National Directorate of Urgent Care, with a National Director of Urgent Care to give ministerial advice in integrated reform of the emergency care system. Institutions, on their part provide, high visibility management actions to unblock bottlenecks in the patient flow pathway, escalation policies, and regular audit of patients failing to meet the 4 hour target. Some institutions have invested in a designated emergency surgeon with a dedicated team and theatre for only emergencies.

Above all, it is critical that departments separate from the ED understand their role in supporting patient flow through the ED.

A vast and fascinating topic

Our subject matter this morning is a vast and fascinating topic, and I have barely scratched the surface with my remarks about improving emergency care through the use of operational standards in the ED. Time has not allowed one to do more than make a passing reference to prehospital care. I have not touched on multidisciplinary working, workforce planning, inter-agency working involving the Police, Fire Service, or organisations like NADMO. I have not mentioned major incidents, mass casualties, epidemic outbreaks, disaster planning and management. I am sure that we will have time during this conference to deliberate on all these important topics. But I hope that at least I have given you a tantalising flavour of how emergency care may be improved in a cost neutral way.

The Ghana College of Physicians and Surgeons as advocate and champion

Emergencies occur everywhere, and each day they consume resources regardless of whether there are systems capable of achieving good outcomes². The Ghana College of Physicians and Surgeons, with her vast repository of expertise, is well placed to act as advocate and champion in meeting the challenges of establishing safe and effective emergency care systems in this country.

Conclusion

In conclusion, I would like to thank and congratulate the GCPS for organising this year's annual meeting under the present theme. It raises the profile of emergency care and provides great practical inspiration to all whose mission is to improve the care of emergency patients. A good communication infrastructure,

redesigning patient process pathways, training health care personnel, team and hospital organisation, involving multi-professional stakeholders, and locally relevant research which accurately characterises the burden of injuries and acute disease, will all help to improve the quality of emergency care.

There is scope for achieving better outcomes for all emergency patients with better planning and structured training of all levels of health care professionals, and without placing intolerable strain on the national budget. I would remind you during your discussions and deliberations in this meeting, paraphrasing Kwame Nkrumah's words in 1953²⁹ that the eyes of the world are upon us, and that our people are looking to us with desperate hope to improve and strengthen emergency care.

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